

## IAU COMMISSION C3 PROJECT GROUP ON ASIAN ASTRONOMY: PROGRESS REPORT, 2019–2021

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### 1 INTRODUCTION

This C3 Project Group was formed in 2019 to promote research and research collaborations on Asian astronomical history, to liaise with the Executive Committee of the International Conference on Oriental Astronomy and the History and Heritage Working Group of the Southeast Asian Astronomy Network, and to plan conferences in collaboration with these and other groups and Asian organisations.

Because of COVID, many planned activities and research projects were severely curtailed or abandoned altogether, but some valuable progress was made, as outlined below.

### 2 CONFERENCES

Before COVID appeared there were two regular Asian history of astronomy conferences that we enjoyed organising and attending: the ICOA conferences which normally were held every three years, and the *ad hoc* SE Asian Conferences of the History and Heritage (H&H) Working Group of the Southeast Asian Astronomy Network, three of which have been held since 2015.

Over the past two decades, the scope of the ICOA Conferences has been expanded thematically and geographically, and papers are now accepted on a wide range of history of astronomy and cultural astronomy topics, from the Middle East, South and East Asia, Southeast Asia, Oceania (Australia and New Zealand) and Pacific Rim nations. Meanwhile the SEAAN H&H Conferences focus on the member nations of SEAAN (Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, Singapore, Brunei, Indonesia and the Philippines) and the influences of India, China and Australia on the astronomical systems of these Southeast Asian nations.

The last ICOA conference (ICOA-9) was held in Pune (India) in November 2016 and ICOA-10 initially was planned for Uzbekistan in 2019 but funding issues led to its reassignment to South Korea in 2020. Then COVID intervened, and we have yet to hold ICOA-10 and celebrate more than 30 years of ICOA Conferences.

We were luckier with the Southeast Asian H&H Conferences, and managed to hold #3 in February 2020 in Chiang Mai, Thailand, immediately before the Thai COVID lockdown. This boutique conference attracted a select audience from Thailand, Vietnam, Malaysia, Indonesia, the Philippines, Scotland and Sweden, with e-papers also submitted from Australia, India, Japan and the USA. This conference was dedicated to Dr Yukio Ōhashi, whose sudden death in October 2019 shocked all of us (see Section 4, below). Subsequently, some of the papers from the H&H#3 Conference were published in the *Journal of Astronomical History and Heritage*, while others appeared in the 2021 book edited by Orchiston and Vahia that is listed below in Section 3.1.

Three weeks after the Chiang Mai conference the History Department at the University of the Philippines Diliman in Manila hosted a conference “Where Science & Empire Met: Observatories in Asia in the Late 19<sup>th</sup> to Mid-20<sup>th</sup> Centuries”, just days before the Philippines COVID lockdown. Papers presented were about observatories in China, the Dutch East Indies (Indonesia), Indo-China (Vietnam), Japan, the Malayan Peninsula, Philippines, Siam (i.e. Thailand) and Vietnam, and often the focus was on meteorology (and especially typhoon and monsoon predictions) rather than astronomy. After various unforeseen delays, recently a decision was made to publish most of the papers from this conference in the March 2023 issue of the *Journal of Astronomical History and Heritage*.

Apart from papers sessions, both the Chiang Mai and Manila conferences featured memorable Conference Dinners and 1-day field trips.

### 3 PUBLICATIONS BY IAU C3 MEMBERS

Listed below are books and research papers that we are aware of by C3 members, which were published during 2019–2021, inclusive. Currently, not all of these authors are active members of the Working Group, but their combined publication output is inspirational and showcases the wide-ranging research carried out on Asian astronomical history. It also illustrates the potential for further research in many areas of Asian astronomical history.

That said, the listing below is by no means definite. There are a number of astronomers who are not C3 members—or even IAU members—yet publish regularly on the history of Asian astronomy or on archaeoastronomy or ethnoastronomy. Among the most prominent of these are Professor Shi Yunli (the Co-Editor of this Journal, from the University of Science and Technology of China), Professor Taufiq Hidayat (Indonesia) and Associate Professor Lê Thành Lân (Vietnam) (e.g. see [Lộc and Lân, 2021](#); [Shi, 2020](#); [2021](#)). Most of Professor Hidayat's recent history of astronomy papers have been co-authored by Wayne Orchiston and are listed below in Section 3.2).

#### 3.1 Books

- Orchiston, W., Sule, A., and Vahia, M. (eds.), 2019. *The Growth and Development of Astronomy and Astrophysics in India and the Asia–Pacific Region: ICOA-9, Pune, India, 15–18 November 2016*. New Delhi, Hindustan Book Agency and Springer Singapore.
- Orchiston, W., and Vahia, M. (eds.), 2021. *Exploring the History of Southeast Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities*. Cham (Switzerland), Springer International Publishers.
- Shylaja, B.S., and Jawagal, S., 2021. *Ganitagannadi – Mirror of Mathematics. A Karana of Text of 1604 in Kannada*. Bengaluru, Navakarnataka Publications.
- Torres, J.R.F., and Dela Cruz, R.A.B., 2021. *Balatik: An English Translation*. Manila, Rizal Technological University.

#### 3.2 Research Papers

- Ansari, S.M.R., 2019. K.D. Naegamvālā, the founder of the first astrophysical observatory in India. In Orchiston, W., Sule, A., and Vahia, M. (eds.), *The Growth and Development of Astronomy and Astrophysics in India and the Asia–Pacific Region: ICOA-9, Pune, India, 15–18 November 2016*. New Delhi, Hindustan Book Agency and Springer Singapore. Pp. 307–324.
- Chatzistergos, T., Ermolli, I., Solanki, S.K., Krivova, N.A., Banerjee, D., plus 2 more authors, 2019. Delving into the historical Ca II K archive from the Kodaikanal Observatory. The potential of the most recent digitized series. *Solar Physics*, 294(10), id.145, 24pp.
- Choi, G.-E., Lee, K.-W., Mihn, B.-H., and Ahn, Y.S., 2019. Analysis of Manchuria astronomical almanacs of 1933–1945. *Journal of Astrophysics and Astronomy*, 40(6), article id. 45, 10 pp.
- Fatima, S., Orchiston, W., and Hidayat, T., 2021. Ethnoastronomy in Madura, Indonesia: observations of the night sky and eclipses. In Orchiston, W., and Vahia, M. (eds.), *Exploring the History of Southeast Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities*. Cham, Springer. Pp. 565–587.
- Fujiwara, T., and Hirai, M., 2019. Clarification of unknown phenomena using historical star catalogs and charts. In Farmanyan, S.V., Mickaelian, A.M., Malville, J.McK., and Bagheri, M. (eds.), *Astronomical Heritage of the Middle East. Proceedings of a Conference held (13–17 November 2017) at the Armenian National Academy of Sciences in Yerevan, Armenia*. San Francisco, Astronomical Society of the Pacific (ASP Conference Series, Volume 520). Pp. 163–170.
- Ganesha, G.K., and Shylaja, B.S., 2019. On stone inscriptions from Bāgalakōṭe and Śivamogga Districts of Karnāṭaka. In Orchiston, W., Sule, A., and Vahia, M. (eds.), *The Growth and Development of Astronomy and Astrophysics in India and the Asia–Pacific Region: ICOA-9, Pune, India, 15–18 November 2016*. New Delhi, Hindustan Book Agency and Springer Singapore. Pp. 157–163.
- Gislén, L., 2019. A hypothetical Romakasiddhānta Calendar. *Journal of Astronomical History and Heritage*, 22(2), 339–341.
- Gislén, L., and Eade, C., 2019a. The calendars of Southeast Asia. 1: Introduction. *Journal of Astronomical History and Heritage*, 22(3), 407–416.
- Gislén, L., and Eade, C., 2019b. The calendars of Southeast Asia. 2: Burma, Thailand, Laos and Cambodia. *Journal of Astronomical History and Heritage*, 22(3), 417–430.
- Gislén, L., and Eade, C., 2019c. The calendars of Southeast Asia. 4: Malaysia and Indonesia. *Journal of Astronomical History and Heritage*, 22(3), 447–457.
- Gislén, L., and Eade, C., 2019d. The calendars of Southeast Asia. 5: Eclipse calculations, and the longitudes of the Sun, Moon and planets in Burmese and Thai astronomy. *Journal of Astronomical History and Heritage*, 22(3), 458–478.
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- Gislén, L., 2021a. Seventeenth century French Jesuit longitude determinations in Asia: on the art of rectifying the clocks. *Journal of Astronomical History and Heritage*, 24(3), 770–775.
- Gislén, L., 2021b. The Burmese Udhaya procedure: a simplified calculation of the oblique ascension of the Sun. *Journal of Astronomical History and Heritage*, 24(3), 818–822.
- Gislén, L., and Eade, C., 2021. The influence of India on Southeast Asia astronomy: of calendars and calculations. In Orchiston, W., and Vahia, M. (eds.), *Exploring the History of Southeast Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities*. Cham, Springer. Pp. 635–651.
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- Hayakawa, H., Sôma, M., Tanikawa, K., Willis, D.M., Wild, M.N., plus 4 more authors, 2019. A transit of Venus possibly misinterpreted as an unaided-eye sunspot in China on 9 December 1874. *Solar Physics*, 294(9), id. 119, 16pp.
- Hayakawa, H., Clette, F., Horaguchi, T., Iju, T., Knipp, D.J., plus 2 more authors, 2020. Sunspot observations by Hisako Koyama: 1945–1996. *Monthly Notices of the Royal Astronomical Society*, 492(3), 4513–4527.
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#### 4 A TRIBUTE TO DR YUKIO ŌHASHI

Dr Yukio Ohashi (1955–2019) who died suddenly on 31 October 2019 was arguably the world's foremost authority on Asian astronomical history, with papers on aspects of Chinese, Indian, Japanese, Southeast Asian (mainly Thailand and Vietnam), Taiwanese and Tibetan astronomical history and mathematical astronomy. Yukio was born in Tokyo, but completed his PhD at the University of Lucknow on Indian mathematical astronomy. Over the years, this evolved into an interest in astronomical instruments, calendars, and the impact of both China and India in the development of astronomy in Southeast Asia. He also supported wide-ranging research in history of astronomy by serving on the Editorial Board of this journal, and refereeing many papers.

Yukio was a long-standing member of our IAU History of Astronomy commissions, and attended a number of General Assemblies. But what we both remember most was Yukio's passion for Asian astronomy conferences, especially the ICOAs. He also was a stalwart of the SE Asian H&H Conferences and was scheduled to attend #3 in 2020, until fate conspired to prevent this. As one of us has noted elsewhere, Yukio "... also loved the social side of astronomy conferences, and especially the field trips and ICOA conference dinners and associated after-dinner sing-alongs ... [He] was a dear friend to many, and we will all miss him terribly. Conferences will not be the same without him." (Orchiston and Nakamura, 2020: 214).

We should also mention that since the 2018–2021 IAU Triennium ended we have lost two further valued members of the Asian history of astronomy community, Professors Rajesh Kochhar and Govind Swarup, both from India. Rajesh was a former President of IAU Commission 41, a former member of the Editorial Board of this journal, and an authority on astronomy in 'British India' (e.g. see Kochhar and Orchiston, 2017). Govind was regarded as the 'Father of Indian Radio Astronomy' (Orchiston and Phakatkar, 2019; Choudhuri, 2021), who not only made major contributions to astrophysics and innovative instrumentation but in recent years published a succession of papers on the history of Indian radio astronomy (e.g. see Swarup, 2017, and references therein).

#### 5 CONCLUDING REMARKS

As with our parent IAU Commission, C3 (History of Astronomy), the Asian Astronomy Project Group

“... was able to make some progress during the Triennium, as reflected in the lists of books and research papers published ...” (Orchiston et al., 2022) and the two conferences that were attended before COVID ended live participation at such events. Since then, we have all become used to attending e-Conferences, workshops and seminars and giving Zoom presentations. Once COVID retreats and ‘live’ conferences resume, we hope that most conferences will also offer an e-option so those without funding or opportunity can still participate and remain active members of the Asian history of astronomy community.

Meanwhile, the wealth of published material listed in Section 3 above bodes well for the future of research in Asian astronomical history, notwithstanding the sad loss of Yukio Ôhashi, Rajesh Kochhar and Govind Swarup. It is particularly heartening to see the ways in which staff in the Department of Astronomy and Space Sciences at Rizal Technological University in the Philippines and the Department of Astronomy at the Institut Teknologi Bandung in Indonesia continue to encourage undergraduate and graduate students to carry out small-scale research projects in the history of astronomy, archaeo-astronomy and ethnoastronomy and present their results at international conferences and publish them [for example, the papers by Fatima et al. (2021), Khairunnisa et al. (2021) and Rasyid et al. (2021) listed in Section 3 are relevant here]. It is also heartening to see that Asian astronomical history continues to attract scholars from around the world and not just from within Asia (e.g. see publications by Gislén and Hoffman listed in Section 3 above).

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